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10/598,283	08/23/2006	Kwan Cheung	MG-2	2312

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EXAMINER
YAARY, MICHAEL D

ART UNIT	PAPER NUMBER
2193	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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PTOL-90A (Rev. 04/07)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 November 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-36</u> is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-36</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>23 August 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some *   c)☐ None of:

         1.☐ Certified copies of the priority documents have been received.

         2.☐ Certified copies of the priority documents have been received in Application No. _____.

         3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>03/18/2010</u>.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

1.　　　Claims 1-36 are pending in the application.

Claim Rejections - 35 USC § 102

2.　　　The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.　　　Claims 1-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Ellis et al (hereafter Ellis)(US Pat. 5,436,653).

4.　　　**As to claim 1,** Ellis discloses a method executed by a digital signal processing system of generating a signature associated with a known signal (abstract), the signature comprised of a set of numeric values of at least one element and corresponding to at least one time frame of the signal, such known signal being identified by an identification index and such time frame index (column 1, line 47-column 2, line 3 and column 10, line 58-column 11, line 27), comprising:

　　　Calculating for at least one time frame of the signal a pre-determined number of spectral magnitude values grouped in at least one frequency band of predetermined width (column 24, lines 14-20, bandwidths);

Calculating for each frequency band a numeric value that is equal to a pre-determined function of one or more of the calculated spectral magnitude values grouped with the frequency band (column 4, line 58-column 5, line 10);

Storing the calculated numeric values in a computer database with a reference to their corresponding time frame index and their corresponding identification index (column 4, lines 13-24, database, and column 44, line 60-65).

5.   **As to claim 2,** Ellis discloses the predetermined function is comprised of either (i) a linear combination, (ii) a quadratic function (iii) a centroid, (iv) a variance, or (v) an nth order moment, where n is a pre-determined number (column 40, lines 49-53, linear function).

6.   **As to claim 3,** Ellis discloses dividing the function result by the pre-determined number of spectral magnitude values in the corresponding frequency band (column 23, lines 33-37, dividing).

7.   **As to claim 4,** Ellis discloses the function is a linear combination where the coefficient of each term of the linear combination is substantially equal to the ordinal index of the spectral magnitude value within the frequency band divided by a predetermined constant (Column 26, line 65-column 7, line 5, linear combination).

8.   **As to claim 5,** Ellis discloses the number of predetermined frequency bands is

between 10 and 100 (Column 22, lines 43-52, 16 bands).

9.   **As to claim 6,** Ellis discloses the frequency band occupy a range of above

approximately 0 Hz and approximately equal to or below 4000 Hz (Column 24, lines 14-

18, 30 Hz).

10.   **As to claim 7,** Ellis discloses the predetermined constant is substantially equal

to the sum of the spectral magnitude values in the corresponding frequency band

(Column 26, line 65-column 7, line 5).

11.   **As to claim 8,** Ellis discloses dividing the function result by the pre-determined

number of spectral magnitude values in the corresponding frequency band (column 23,

lines 33-37).

12.   **As to claim 9,** Ellis discloses where the width of a frequency band is set to be

substantially larger than the magnitude of the frequency shift that results from a

predetermined maximum amount of variation in the playback speed of the known signal,

such shift being measure at one or both of the upper or lower boundary of the frequency

band (column 4, line 58-column 5, line 10).

13.   **As to claims 10 and 11,** Ellis discloses where the upper boundary of the

frequency band is substantially equal to the lower boundary plus a vale equal to the

absolute value of the maximum relative playback speed variation, times the lower

boundary, times a constant, where the constant ranges between approximately 1 and

100, where the constant is between 10 and 50 (column 4, line 58-column 5, line 10 and

column 22, lines 43-59).

14.   **As to claims 12 and 13,** Ellis discloses for each frequency band the upper

boundary of the frequency band is substantially equal to the value of the lower boundary

of the frequency band times the sum of one plus a pre-determined value, where the

predetermined value is between 0 and 10 (column 4, line 58-column 5, line 10 and

column 22, lines 43-59).

15.   **As to claim 14,** Ellis discloses a method executed by a signal processing system

for determining whether a portion of a detected signal of a pre-determined number of

sequential time frame duration is substantially the same signal as a portion of at least

one know signal out of a plurality of known signals (abstract), each portion of the

plurality of known signal comprised of a plurality of sequential time frame duration and

each time frame of the known signal having an identification index and a time frame

index (column 1, line 47-column 2, line 3 and column 10, line 58-column 11, line 27),

comprising:

Calculating for at least one of the time frames of at least one of the known signal

a first signature comprised of a set of numbers derived from a predetermined number of

spectral magnitude values detected during the first time frame (column 4, lines 13-17

and column 11, lines 28-46)

Storing in a computer database each first signature with a reference to its signal

identification index and a reference to the approximate location in time of the time frame

from substantially the beginning of said known signal (column 11, lines 47-68,

database);

Calculating for at least one of the time frames of the detected signal a second

signature comprised of a set of numbers derived from a predetermined number of

spectral magnitude values detected during the time frame column 4, lines 13-17 and

column 11, lines 28-46);

Selecting from the stored set of first signatures those first signatures that in

relation to the second meet a predetermined matching criteria, where such selection

occurs as a result of the arrival of a new time frame in the detected signal (column 11,

lines 28-68 segment matching).

16.   **As to claim 15,** Ellis discloses wherein the first signature and second signature

is calculated and stored using one of the methods claim 1, claim 2, claim 5, claim 7,

claim 9, claim 11 (see claim 1 above).

17.   **As to claims 16 and 17,** Ellis discloses calculating a set of absolute differences

between each ordinal member of the set of numbers the first signature and each such

member's corresponding ordinal member of the set of numbers comprising the second

signature; calculating a sum of the absolute values; and determining whether the sum

produces a value less than a pre-determined value and whether the sum is the

minimum sum for all the first signatures tested (column 12, lines 4-52 and column 19,

lines 45-58).

18.   **As to claim 18,** Ellis discloses calculating an error value using one of the group:

(i) the approximate vector distance from the first signature to the second signature; (ii)

the approximate L-1 norm between the first signature and the second signature; (iii) the

approximate maximum difference between any member in the first signature and its

corresponding ordinal member in the second signature; (iv) the approximate minimum

difference between any member in the first signature and its corresponding ordinal

member in the second signature; (v) the approximate average difference between all of

the members in the first signature and their corresponding members in the second

signature (column 17, lines 22-47).

19.   **As to claim 19,** Ellis discloses determining whether the number of first

signatures that meet the predetermined matching criteria and have the same

identification index is equal to or greater than a number between and including K+1 and

2K+1, where K is evaluated such the 2K+1 is substantially equal to the predetermined

number of time frames (column 11, lines 28-68).

20.   **As to claim 20,** Ellis discloses determining whether the values of the time frame

indices corresponding to matching first signatures with the same identification index

increase substantially monotonically in relation to the values of the time frame indices of

the matching time frames of the detected signal (column 4, lines 9-34).

21.   **As to claim 21,** Ellis discloses determining whether the values of the time frame

indices corresponding to matching first signatures with the same identification index are

substantially linearly correlated with the values of the time frame indices of the

mathching time frames of the detected signal (column 11, lines 28-68).

22.   **As to claim 22,** Ellis discloses calculating an approximate regression analysis

between the values of the time frame indices corresponding to matching first signatures

with the same identification index and the values of the time frame indices of the

matching time frames of the detected signal (column 4, lines 9-34, matching).

23.   **As to claim 23,** Ellis discloses where the determination is comprised of a test

whether the correlation coefficient is greater than or equal to approximately .5 (column

22, lines 43-59, coefficients).

24.   **As to claim 24,** Ellis discloses where the determination is comprised of a test

whether the linear slope is within a range from and including approximately 2 to and

including approximately 6 (column 22, lines 43-59).

25.   **As to claim 25,** Ellis discloses where the time frame indices of the detected

signal and a matching known signal are periodically tracked to confirm that in a

sequence of at least two time frames, the time frame indices of the detected signal

increases approximately in correspondence with the increase in the time frame indices

of the matching known signal (column 4, lines 9-34).

26.   **As to claim 26,** the claim is rejected for similar reasons as claims 1 and 14

above Ellis further discloses deleting from the data structures those time frame indices

and corresponding identification indices where fewer than approximately K+1 entries in

the list have the same identification index, where K is calculated such that 2K+1 is equal

approximately to the predetermined number of times frames constituting the portion of

the detected signal; deleting from the list those time frame indices and identification

indices where the time frame indices of the first signature are not confirmed to increase

substantially in synchrony with the time frame indices of the detected signal (column 28,

line 66-column 29, line 35).

27.   **As to claim 27,** Ellis discloses a method executed by a signal processing system

of searching a database comprised of a set of at least n first signatures with

corresponding identification indices and time frame indices, where each first signature

represents the frequency components of a known signal during the time frame, the

search looking for all first signatures that together with a second signature meets a pre-

determined matching cirteria, where the second signature represents the frequency

components of a detected signal during a time frame (abstract ;column 1, line 47-

column 2, line 3 and column 10, line 58-column 11, line 27; and column 11, lines 47-68,

database), comprising:

Storing in a computer memory a first array comprised of all of the first signatures,

whereby the nth row in the first data array is the set of members of the nth first signature

(column 16, lines 14-26, matrix); For at least one column in the first data array, sorting

within the computer memory, the elements of the column in either ascending or

descending order (column 16, lines 14-64); Storing in computer memory an additional

data array where one element in the second data array corresponds to an element in

the one column of the first data array; and the value of the one element in the second

data array cross-indexes to where the corresponding element in the first data array

originated prior to the sorting step (column 16, lines 14-64 determining value); Applying

a search using the second signature to find best match between the second signature

and the rows of the first data array; recovering the identification index and time frame

index of any matching first signature by using the cross-index of the second data array

and applying it to the matching row (column 16, lines 14-64, comparing for differences).

28.   **As to claim 28,** Ellis discloses the search algorithm is one of binary search, B

Tree, linear search, heuristic tree searching, depth first search, breadth first search

(column 40, lines 49-53, linear function).

29.   **As to claim 29,** the claim is rejected for similar reasons as claim 28 above.

30.   **As to claim 30,** Ellis discloses the predetermined calculation is a linear

combination of at least two elements of the signature (column 40, lines 49-53, linear

function).

31.   **As to claim 31,** Ellis discloses the subset has less than five elements of the first

signatures (column 12, lines 11-21).

32.   **As to claim 32,** Ellis discloses where the error function is one of a determination

whether two integer values are within a threshold distance apart, a selection of first

integer that is the minimum distance to the second integer relative to all other first

integers (column 4, lines 35-57).

33.   **As to claim 33,** Ellis discloses the signal is comprised of programming of

unknown identity that has not been found to match any portion of any known signal

further comprised of time frames with corresponding signatures comprising:

Creating an arbitrary identifier with an identification index; assigning the

identification index to those signatures derived from the signal; replacing the arbitrary

identifier with a correct identification when the unknown signal is identified (column 9,

14-54, unknown segments).

34.   **As to claim 34,** Ellis discloses replacing the arbitrary identification index in the

database with a pre-existing identification index that references valid identification data

identifying the signal (column 9, lines 32-55).

35.   **As to claims 35 and 36,** Ellis discloses a machine comprising a central

processing unit, a digital data transceiver device and a data storage device comprised

of any machine readable media, where the machine readable media contains a

computer program that when executed by a machine, performs any one of the methods

of claims 1-14 or 16-34; and a machine readable media of any type, which contains

data that is a computer program that when executed by a computer, performs any one

of the methods of Claims 1-14 or 16-34 (fig. 1 and 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to MICHAEL YAARY whose telephone number is

(571)270-1249. The examiner can normally be reached on Mon-Fri 9 a.m.-5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Lewis Bullock can be reached on 571-272-3759. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. Y./
Examiner, Art Unit 2193

/Lewis A. Bullock, Jr./
Supervisory Patent Examiner, Art Unit 2193